

Alg. 2 Warm Up #12-2

1. Simplify: $\frac{4x^2 + 5x - 6}{3x^2 + 5x - 2} \div \frac{4x^2 + x - 3}{6x^2 - 5x + 1}$

2. Solve: $\log_3(x+6) + \log_3 x = 3$

3. Solve on $(0, 2\pi]$: $\sin^2 \theta = 3 \cos^2 \theta$

1. Solve on $(0, 2\pi]$

$$\cos x - \cos x(\sin x) = 0$$

$$\cos x(1 - \sin x) = 0$$

$$\cos x = 0 \quad 1 - \sin x = 0$$

$$\sin x = 1$$

$$x = \frac{\pi}{2}, \frac{3\pi}{2}$$

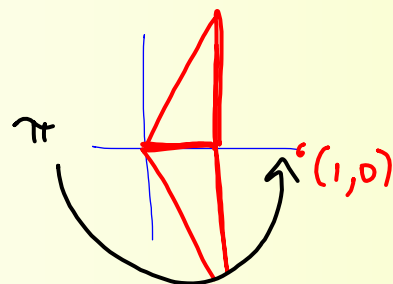
$$x = \frac{\pi}{2}$$

2. Solve on $[\pi, 2\pi]$

$$\frac{6\cos x}{6} = \frac{3}{6}$$

$$\cos x = \frac{1}{2}$$

$$x = \frac{5\pi}{3}$$



HW Questions:



8-169. A polynomial function has the equation $P(x) = x(x-3)^2(2x+1)$. What are the x -intercepts?

LC is $+$ \rightarrow rises rt.
 LC is $-$ \rightarrow falls rt.

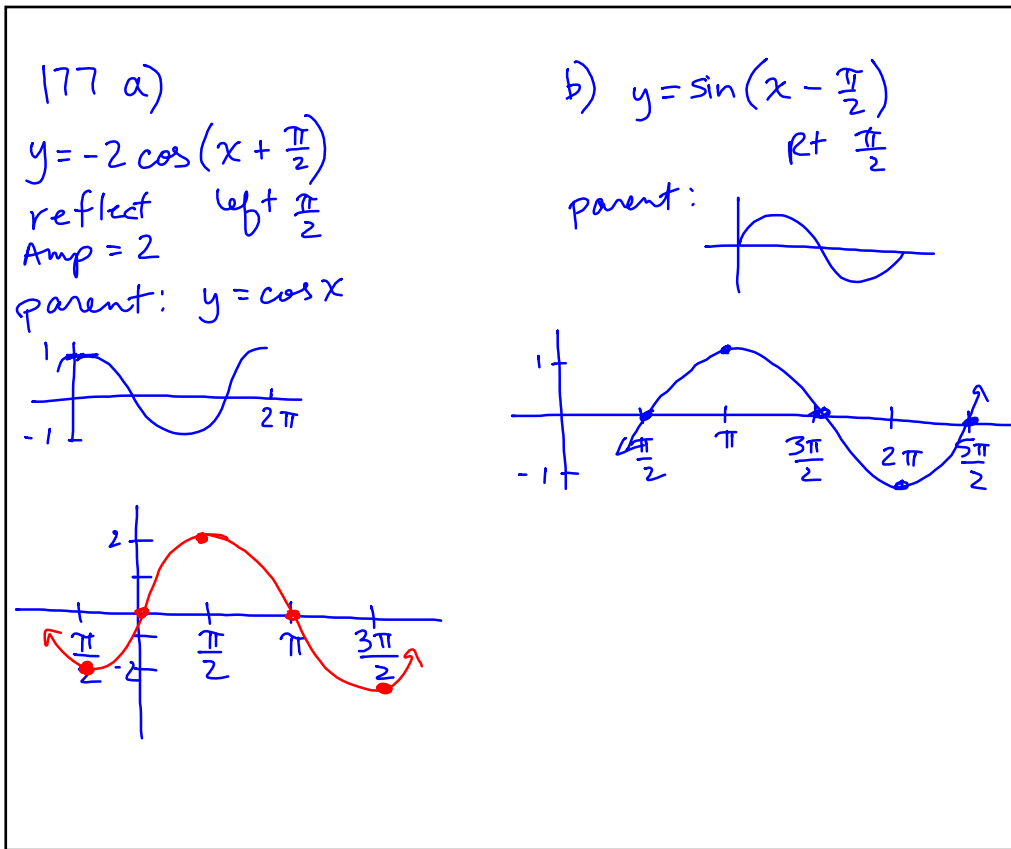
even power: same

odd power: opposite
 end behavior

8-177. Graph two cycles of each function.

a. $y = -2 \cos(x + \frac{\pi}{2})$

b. $y = \sin(x - \frac{\pi}{2})$



CL 8-181. Decide if each of the following functions has real or complex roots

a. $y = 3x^2 + 5x + 4$

b. $y = 3x^2 + 5x - 4$

$\sqrt{-}$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \rightarrow \text{check}$$

CL 8-184. Simplify each expression

a. $(3+4i)+(7-2i) = 10+2i$

b. $(3+5i)^2$

c. $(7+i)(7-i)$

d. $(3i)(2i)^2$

e. i^3

f. i^{32}

$$(a+b)(a-b)$$

$$a^2 - b^2$$

$$(3+5i)(3+5i)$$

$$(i^4)^8 = 1$$

$$i^4 = i^2 \cdot i^2$$

$$(-1)(-1)$$

$$i^{63} = (i^4)^{15} \cdot i^3 = -i$$

$$26) \quad 4\left(\frac{z+y}{2} + \frac{z-y}{4}\right) = 3 \cdot 4 \quad 22\left(\frac{4z-y}{2} + \frac{5z+2y}{11}\right) = 3 \cdot 22$$

$$2(z+y) + z-y = 12$$

$$3z + y = 12$$

$$54z - 7y = 66$$

$$27b) \quad \log\left(\frac{2x}{x^2}\right) = -2 \quad \rightarrow \quad \frac{\text{check } x=0}{\log_{10}(2 \cdot 0)}$$

$$10^{-2} = \frac{2x}{x^2}$$

$$\frac{1}{100} = \frac{2x}{x^2}$$

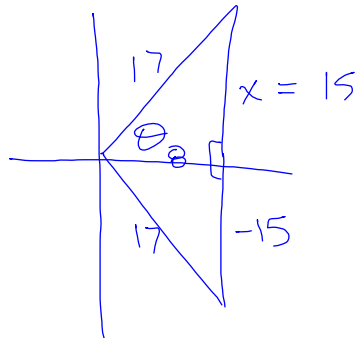
$$x^2 = 200x$$

$$x^2 - 200x = 0$$

$$x(x - 200) = 0$$

$$x = \cancel{0}, 200$$

$$56) \quad \cos \theta = \frac{8}{17}$$



$$\sin \theta = \pm \frac{15}{17}$$

From ch.9

77)

$$b) \quad 3^{-4} \cdot 3^4 = 3^{-4+4} \\ = 3^0 \\ = 1$$

$$c) \quad (3^{-1} + 3^{-3}) 3^4$$

$3^3 + 3^1$

$27 + 3$

30

$$d) \quad \frac{3^{-2} - 3^{-1}}{3^{-3} + 3^{-4}}$$

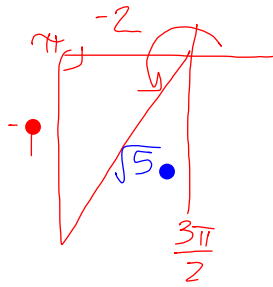
$\frac{1}{9} - \frac{1}{3} \cdot \frac{3}{3}$

$\frac{3}{3} \cdot \frac{1}{27} + \frac{1}{81}$

$-\frac{2}{9} \cdot \frac{81}{4}$

$-\frac{9}{2}$

$$79) \tan \theta = \frac{1}{2} \quad \pi \leq \theta \leq \frac{3\pi}{2}$$



$$\sin \theta = -\frac{1}{\sqrt{5}}$$

$$= -\frac{\sqrt{5}}{5}$$

$$\sqrt{1+4} = x$$

Write the standard form equation for the parabola through:

$$(1, -3), (-2, 18), (4, -6)$$

$$y = ax^2 + bx + c$$

$$(1, -3) \rightarrow -3 = a(1)^2 + b(1) + c \rightarrow a + b + c = -3$$

$$(-2, 18) \rightarrow$$

$$4a + 2b + c = 18$$

$$16a + 4b + c = -6$$

$$(4, -6) \rightarrow$$

$$\textcircled{3} - \textcircled{2} \quad (12a + 6b = -24) \div 6$$

$$2a + b = -4$$

$$y = x^2 - 6x + 2$$

Things to review for the final:

+ - \times \div Rational Expressions

Absolute Value Inequalities

Inverses, Exponents & Logarithms

3-D Graphing and Solve a System with 3 variables

Trig: Unit circle, special Δ 's, pythagorean identity, sine & cosine graphs, transformations

Polynomials:

Equations \longleftrightarrow Graphs

imaginary #'s

HW: Tan review worksheet

Answers follow this slide.

Tan WS Answers:

1. Dom for f : $x \geq 4$
 Range: $y \geq 2$

$$f^{-1}(x) = (x-2)^2 + 4$$

dom: $x \geq 2$

range: $y \geq 4$

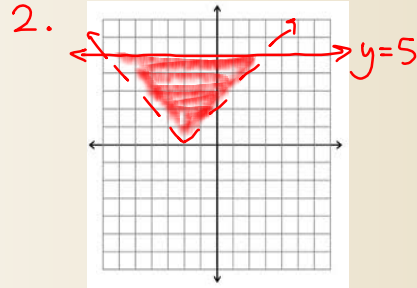
3. LCD = $3x(x+2)$

$$\frac{x-3}{3x}$$

5. Use $y = ax^2 + bx + c$

$(0, -10) \rightarrow c = -10$

$$y = -3x^2 + 5x - 10$$



4. a) $(i^4)^{31} \cdot i^2 = \boxed{-1}$

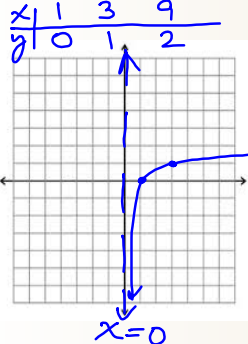
b) $5 + 12i$

6. Eliminate y

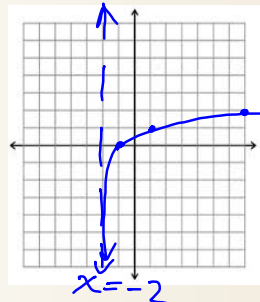
$(2) + (3)$

$(1) + (2)(2) \quad \boxed{(3, 1, -4)}$

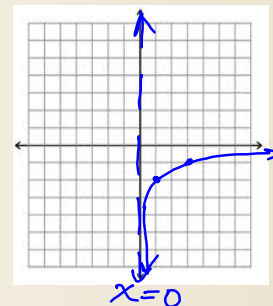
7. $3^y = x$



8. left 2



9. down 2



10) a. left $\frac{\pi}{2}$ (2)

b. horizontal compression (4)

c. vertical stretch & horiz. stretch (5)

d. down 3 (3)

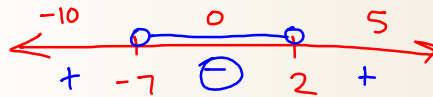
e. reflect in x-axis, horizontal compression, right $\frac{\pi}{8}$ (1)

1) a. $\theta = \frac{2\pi}{3}, \frac{5\pi}{3}$

b. $x = 3$

c. $x^2 + 5x - 14 < 0$ look for where the
 $(x+7)(x-2) < 0 \leftarrow$ product is negative.

test:



$$-7 < x < 2$$

11d $x = -1$

e. $-9 \leq x \leq 3$

f. $x = \frac{1}{2}$